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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
UHLIR, NIKOLAS J	

ART UNIT	PAPER NUMBER
1773	18

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/926,609	MESSERE ET AL.	
	Examiner	Art Unit	
	Nikolas J. Uhlir	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 January 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-8,10-12,14 and 18-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 5-8, 10-12, 14, and 18-26* _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. This office action is in response to the amendment/request for continued examination (RCE) dated 1/10/03. Applicant's amendment to the claims 1 and 21 is sufficient to overcome the prior 35 U.S.C 102(b) rejection of these claims over US4767671 to Parker. Accordingly, this rejection is withdrawn. Further, applicant's arguments regarding the 35 U.S.C 112 first paragraph rejection of claims 1-3, 5-12, 14, and 16-18, and 19-23, and the second paragraph rejection of claims 1-3, 6-8, 10-12, 14, and 18-25 are persuasive. Accordingly, these rejections are withdrawn. Currently, claims 1-3, 5-8, 10-12, 14, and 18-26 are pending.

Election/Restrictions

2. Claim 26 is noted to contain nominal method steps. At this time restriction has not been required between the product claims 1-3, 5-8, 10-12, 14, and 18-25 and method claim 26 because the method claim does not recite any significant manipulative steps and therefore considered as part of the product claims. If the method claim is amended to contain significant method steps it will be subject to restriction based on original presentation.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-3, 6-8, 10, 19-23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scholz et al. (US5753373).

5. Claim 1 requires a transparent glazing having at least one viewing area, wherein the viewing area is combined with a porous anti-frosting adsorbent layer deposited on at least one surface of the viewing area, wherein said layer comprises at least one hydrophilic polymer and a porous absorbent material, wherein the at least one hydrophilic polymer and the porous absorbent material are different from one another, and wherein the pores in the layer in the wet state have a mean diameter between 1 and 15μ.

6. Regarding these limitations, Scholz et al. (Scholz) teaches a coating composition having anti-reflective and anti-fogging properties, wherein the coating composition is adventitiously applied to substrates such as windows and windshields (column 20, lines 13-31. The anti-fog function of the coating is performed by the coating either resisiting the formation of water droplets on its surface or by adhering a uniform film of water on its surface such that the transparency of the film is not reduced (column 5, lines 30-47). Thus, as the adherence of a gas, liquid or vapor at the surface of a material is the quintessential definition of adsorption, the examiner takes the position that Scholz meets the requirement of an adsorbing film. A window or a windshield is considered by the examiner to be equivalent to applicant's claimed transparent glazing having at least one viewing area. The coating composition that is applied to the surface of the substrate comprises at least inorganic metal oxide particles and a surfactant having at least one hydrophilic and one hydrophobic group (column 3, lines 20-35). In addition the coating composition contains a binder, which can be a material such as polyvinylpyrrolidone (PVP) (column 19, lines 60-67).

7. Therefore it would have been obvious to one of ordinary skill in the art to utilize PVP as the binder in Scholz, as Scholz recognizes the equivalence of PVP to the other materials listed as suitable for use as a binder.

8. As PVP is listed by the instant specification (see page 5) and the instant claim 6 as a hydrophilic polymer, it is the examiners position that when PVP is utilized as the binder in Scholz, the applicant's claim requirement of a hydrophilic polymer is met.

9. Regarding the requirement of a porous absorbent material, Scholz teaches that the inorganic metal oxide particles form a continuous and highly porous network (column 4, lines 8-21). Though Scholz does not specifically state that this network is an "absorbent" material, Scholz teaches that the inorganic particles can be TiO_2 (see column 5, line 1).

10. Therefore it would have been obvious to one of ordinary skill in the art to utilize TiO_2 particles and the inorganic oxide particles in Scholz, as Scholz teaches the equivalence of TiO_2 to the other materials listed as suitable for use as the inorganic particles.

11. It is the examiners position that when TiO_2 is utilized in the invention of Scholz, the resulting TiO_2 network meets applicants claimed requirement of a porous absorbent material, as these particles match the material required by claim 22, and the network formed by these particles is accurately described as a "mesoporous" material that is absorbent.

12. Regarding applicants claim 1 requirement that the pores in the layer have a mean diameter between 1-15μ "in the wet state." The examiner acknowledges that

Scholz does not specifically teach the porosity "in the wet state," as required by claim 1. However, as the coating composition of Scholz is manufactured from identical materials to those disclosed in the instant specification (specifically a PVP film containing TiO_2 particles), the examiner takes the position that these limitations are met. The applicant should note that the examiner does not interpret the "mean diameter" of a pore to require that the diameter of a pore in all directions (i.e. three-dimensional pore diameter that requires both the width **and** depth of the pore to be 1-15μ). Rather, the examiner interprets "mean diameter" to mean the average two-dimensional diameter of a pore. Thus, the depth of the pore is not required to be between 1-15μ. Thus, a film that is thinner than 1-15μ can still meet the claimed mean diameter.

13. Claim 2 requires the layer of claim 1 to be deposited on the surface of the glazing. Scholz teaches depositing the coating on the surface of the substrate (solumn 3, lines 50-52).

14. Claim 3 requires the layer to be deposited on a plastic film and the film is deposited on the glazing. Scholz teaches the depositing a primer layer of polyvinylidene chloride (equivalent to applicants claimed plastic film) on the substrate and subsequently depositing the coating layer on the layer of polyvinylidene chloride (column 20, lines 8-11).

15. Claims 6 and 7 require the hydrophilic polymer to be a polymer or copolymer of vinylpyrollidone, and require the absorbent material to be an inorganic or organic material. These limitations are met as set forth above for claim 1.

16. Claim 8 requires a specific volume of pore in the wet state. The examiner acknowledges that Scholz does not explicitly teach this limitation. However, the examiners position is that the volume of pores will be met per the reasons set forth above at section 12 of this office action.

17. Claim 10 requires the adsorbent layer to be less than 100μ thick. Scholz teaches that a suitable average thickness for the coating composition is between 500-2500 angstroms (column 21, lines 5-12). Thus, the requirements of claim 10 are met.

18. Claim 19 requires the layer to be porous to water. Though not expressly taught, the examiner's position is that the film of Scholz will meet this requirement, as it is manufactured from the same materials as the instant invention and is utilized for the same general purpose.

19. Claim 20 requires the absorbent material of claim 7 to be a polyurethane. Scholz teaches that in addition to PVP, suitable binders include water swellable or watersoluble polyurethanes, polyacrylates, etc... (column 19, lines 60-67).

20. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a water swellable (i.e. water absorbent) polyurethane as the binder in Scholz, as Scholz teaches the equivalence of water swellable polyurethanes to the other materials listed as suitable for use as a binder material.

21. Further, Scholz teaches that the surfactant utilized in the coating composition must have at least one hydrophilic group (column 5, lines 60-66). Block copolymer surfactants are specifically listed as suitable surfactants (column 6, lines 1-10). It is the examiners position that the hydrophilic block copolymer surfactant is equivalent to

applicants claimed polymer binder, and the water swellable polyurethane is equivalent to applicants claimed absorbent polyurethane. Thus, the limitations of claim 20 are met.

22. Regarding claims 21-22, these limitations are met as set forth above for claim 7.

23. Claim 23 requires the absorbent material to be obtained by depositing an orthosilicate hydrolysis condensation product. Scholz et al. teaches the coating composition may contain a coupling agent that is capable of binding the surfactant in the composition with the metal oxide particles (column 16, lines 43-45). Suitable coupling agents include silanes, siloxanes, and tetraalkoxy coupling agents such as tetraethylorthosilicate (column 16, line 65-column 17, line 63).

24. Therefore it would have been obvious to one of ordinary skill in the art to select tetraethylorthosilicate as the coupling agent in Scholz et al.

25. One would have been motivated to select tetraethylorthosilicate due to the teaching in Scholz et al. of the functional equivalence of tetraethylorthosilicate to the other coupling agents listed as suitable.

26. Thus, the examiner takes the position that when tetraethylorthosilicate is used as the coupling agent in Scholz et al. the limitations of claim 23 are met, as tetraethylorthosilicate is an orthosilicate and thus meets the type of material recited as suitable for use in claim 23.

27. Claim 26 requires a method of reducing frost on a transparent glazing in a refrigerated environment comprising depositing a porous antifrosting adsorbent layer that comprises at least one hydrophilic polymer and a porous absorbent material, on the glazing. These limitations are met as set forth above for claim 1.

28. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scholz et al. as applied to claim 1 above, and further in view of Creasy et al. (US5262475).

29. Scholz et al. does not teach a hydrophilic polymer that is crosslinked, as required by claim 5.

30. However, Creasy et al. teaches that crosslinking PVP when it is used anti-fogging compositions provides a degree of control over the properties of the resulting coating. By controlling the crosslink density of the PVP, films that are hard and scratch resistant (high crosslinking) or films that are soft and flexible (low crosslinking) can be formed (column 5, lines 38-51). Further, by crosslinking PVP, strong, clear, and chemically resistant films can be formed (column 3,m lines 13-21)

31. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to crosslink the PVP binder resin taught by Scholz et al.

32. One would have been motivated to make this modification due to the teaching in Creasy et al. that the properties of the resulting coating could be tailored by controlling the amount of crosslinking in the PVP polymer, and the fact that clear, strong, and chemically resistant films are formed from crosslinked PVP.

33. Claims 1, 11-12, 14, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Florentin et al. (US6052965) in view of Scholz et al.

34. Florentin et al. teaches a door or wall of an environmental chamber, in particular a glazed door or wall, and more particularly a refrigerated chamber in which cold or

frozen products are displayed (column 1, lines 7-13). This environmental chamber consists of an insulating panel comprising at least two glass substrates, which are separated from one another via surfaces mounts. The space between the two glass sheets is a vacuum (column 3, lines 5-10). Florentin et al. teaches that this vacuum insulating glazing panel exhibits better thermal insulating properties then prior known insulating panels (column 4, lines 25-32 and Table 1). Florentin teaches depositing a thin layer of conductive material around the periphery of one of the surfaces of the vacuum insulating glazing, and a depositing separate conductive material on the center portion of the same surface, such that the center and periphery portions can be independently heated via a current provided by electrodes to prevent the appearance of condensation (i.e fog) on the surface of the panel (column 6-20). Thus, the examiner takes the position that the limitations of claims 1, 11-12, and 18, which require a glazing (claim 1), specifically a double pane vacuum insulated glazing (claims 11-12), and a refrigerated door enclosure (claim 18) are met by Florentin et al.

35. However, Florentin et al. does not teach an antifrosting adsorbent material comprising a hydrophilic polymer and an absorbent material porous to water, as required by claim 1. Further, Florentin does not teach applying an antifrosting absorbent material having the aforementioned composition to the refrigerated surface of an insulating glazing that comprises at least two glazing units (claims 11 and 14), specifically a vacuum insulated glazing (claim 12), wherein the glazing is part of a refrigerated door enclosure (claim 18).

36. However, Scholz et al. as stated above for claims 1-3, 6-8, 10, 19-23 and 26 teaches an anti-fogging composition that comprises a hydrophilic polymer and a porous metal oxide. Such a composition is effective for the prevention of fog on a number of substrates, including windows (column 3, lines 60-65).

37. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the anti-fogging coating composition taught by Scholz et al. on the viewing surfaces of the vacuum insulated glazing taught by Florentin et al.

38. One would have been motivated to make this modification due to the fact that the Scholz et al. coating composition does not require power to operate, and thus would provide a reduction in the operating cost of the environmental chamber taught by Florentin et al.

39. While the examiner acknowledges that neither Florentin nor Scholz teaches utilizing an anti-fog coating composition comprising a hydrophilic polymer and an absorbent material porous to water on a refrigerated window enclosure, these references are both directed towards solving a similar problem, namely preventing a window from losing its transparency due to condensation forming on the surface of the window. As Scholz teaches a solution to this problem that does not require power, there is clear motivation to substitute the anti-fog film taught by Scholz for the current heating solution of Florentin.

40. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scholz as applied to claim 10 above, and further in view of Hatekeyama et al. (US6394613).

41. Scholz fails to teach a water adsorbing film having a thickness that is ≥14.5 but <100μ, as required by claim 24.

42. However, Hatekeyama teaches an antifog coating that is similar to that of Scholz, and teaches that if the coating is less than 1μ thick, the anti-fogging properties of the film are reduced, and if the film is formed to be grater than 20μ thick, the film is not uniform (see column 4, lines 1-8)

43. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the anti-fog coating of Scholz to a thickness of 20μ, ain lieu of the teaching in Hatekeyama that an anti-fogging film (similar to Scholz' film) that is 20μ thick exhibits improved antifogging properties over a film that is less than 1μ thick.

44. Regarding the modification of Scholz with Hatekeyama. The examiner acknowledges that Scholz teaches that the anti-fog/anti-reflection film is suitably formed to a thickness between 500-2500 angstroms, which is substantially thinner than that suggested by Hatekeyama. Scholz also teaches that if the film is formed outside this thickness range, the antireflection properties of the film may decrease drastically. However, this statement does not teach away from forming the Scholz film to a different thickness, as Scholz requires no minimum amount of antireflection. Rather, this statement in Scholz merely teaches that controlling the thickness of the film within this range optimizes the films antireflection properties. Further, Hatekeyama clearly shows that a film similar to the Scholz film exhibits reduced antifogging properties when it is less than 1μ thick. Thus, the prior art is basically teaching that by controlling the

thickness of an anti-fogging film, the anti-fogging or antireflection properties of the film can be optimized. Thus, given that the Scholz patent requires no minimum amount of antireflection, one of ordinary skill would have been motivated with a reasonable expectation of success to modify the Scholz film per the teachings of Hatekeyama so as to obtain a film having improved anti-fogging properties.

45. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scholz as applied to claim 3 above, and further in view of Hayakawa Rubber Co. (JP05-222227).

46. Scholz as set forth above for claim 25 fails to teach applying an adsorbent anti-frosting coating to the surface of a polycarbonate film that is applied to a transparent glazing.

47. However, Hayakawa Rubber (Hayakawa) teaches forming anti-fogging coatings on polycarbonate films (abstract). Once the anti-fogging coating is applied to the polycarbonate film, the film can be applied to transparent moldings mad of glass or plastic. By forming the anti-fogging coating on the polycarbonate film, the anti-fogging coating can be adhered to the molding without strong adhesives, and can be peeled and changed easily, enabling the anti-fogging film to be changed (abstract).

48. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the anti-fogging coating of Scholz on the polycarbonate film prior to applying the anti-fogging film to a glass or plastic substrate, as taught by Hayakawa.

49. One would have been motivated to make this modification in lieu of the teaching in Scholz that the anti-fogging coating is suitably applied to polycarbonate film substrate (see column 20, lines 15-25), and the teaching in Hayakawa that by applying an anti-fogging coating to a polycarbonate film, the anti-fogging coating can be adhered to glass substrates without the use of strong adhesives, and can be peeled and changed easily.

Response to Arguments

50. Applicant's arguments filed 1/10/03 have been fully considered but they are not persuasive. The arguments presented with respect to the prior 35 U.S.C 102(b) rejection, and 35 U.S.C 112 first and second paragraph rejections is moot as these rejections have been withdrawn. The applicant's remaining arguments are addressed in the rejection above. Specifically, applicant's argument relating to pore diameter and porosity are addressed at section 12 of this action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikolas J. Uhlir whose telephone number is 703-305-0179. The examiner can normally be reached on Mon-Fri 7:30 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on 703-308-2367. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0389.

nju

Paul Thibodeau
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